What is claimed is:

1. (New) A rolling bearing with a rotation sensor, comprising a rotating bearing ring, a fixed bearing ring, a rotating element mounted on said rotating bearing ring, a core metal mounted on said fixed bearing ring, an annular sensor housing fitted on said core metal, and a detection element mounted on said sensor housing so as to be adjacent to and oppose said rotating element, wherein said sensor housing is formed with a groove in the outer periphery thereof, said groove being filled with an adhesive to bond said sensor housing to said core metal through said adhesive, and said core metal and said sensor housing are fixed together by fitting a protrusion formed on said core metal in a recess formed in said sensor housing.

2. (New) The rolling bearing with a rotation sensor as claimed in claim 1 wherein said groove formed in said sensor housing is formed so as to extend continuously in a circumferential direction.

3. (New) The rolling bearing with a rotation sensor as claimed in claim 2 wherein said protrusion is a claw-like engaging piece formed on a peripheral wall of said core metal, said recess is a cutout groove, and said engaging piece is bent and fitted in said cutout groove.

4. (New) The rolling bearing with a rotation sensor as claimed in claim 2 wherein said protrusion protrudes toward the inner periphery of said core metal so as to be curved along the axial direction of said core metal, said protrusion comprises a plurality of protrusions formed in the circumferential direction of said core metal, and wherein said recess of said sensor housing comprises a plurality of recesses formed in the circumferential direction so as to oppose said protrusions.

5. (New) The rolling bearing with a rotation sensor as claimed in claim 2 wherein said protrusion comprises a plurality of protrusions having a V-shaped sectional shape in the axial direction of said core metal and formed in the circumferential direction of said core metal, and

wherein said recess of said sensor housing comprises a plurality of recesses formed in the circumferential direction so as to oppose said protrusions.

6. (New) The rolling bearing with a rotation sensor as claimed in claim 2 wherein said protrusion comprises a plurality of protrusions having a U-shaped sectional shape in the axial direction of said core metal and formed in the circumferential direction of said core metal, and wherein said recess of said sensor housing comprises a plurality of recesses having a U-shape and formed in the circumferential direction so as to oppose said protrusions.

7. (New) The rolling bearing with a rotation sensor as claimed in claim 1 wherein said protrusion is a claw-like engaging piece formed on a peripheral wall of said core metal, said recess is a cutout groove, and said engaging piece is bent and fitted in said cutout groove.

8. (New) The rolling bearing with a rotation sensor as claimed in claim 1 wherein said protrusion protrudes toward the inner periphery of said core metal so as to be curved along the axial direction of said core metal, said protrusion comprises a plurality of protrusions formed in the circumferential direction of said core metal, and wherein said recess of said sensor housing comprises a plurality of recesses formed in the circumferential direction so as to oppose said protrusions.

9. (New) The rolling bearing with a rotation sensor as claimed in claim 1 wherein said protrusion comprises a plurality of protrusions having a V-shaped sectional shape in the axial direction of said core metal and formed in the circumferential direction of said core metal, and wherein said recess of said sensor housing comprises a plurality of recesses formed in the circumferential direction so as to oppose said protrusions.

10. (New) The rolling bearing with a rotation sensor as claimed in claim 1 wherein said protrusion comprises a plurality of protrusions having a U-shaped sectional shape in the axial direction of said core metal and formed in the circumferential direction of said core metal, and

wherein said recess of said sensor housing comprises a plurality of recesses having a U-shape and formed in the circumferential direction so as to oppose said protrusions.